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COVID 19 CHALLENGES IN DENTAL HEALTH CARE AND DENTAL SCHOOLS

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Abstract

The spread of Covid-19 in Europe represented a challenge both for dental health care providers and dental schools. The dental regulatory authorities provided guidance with instructions and recommendation for outbreak pandemic period that addressed to the limitation of contact with patients to only dental care emergencies and urgencies and to the implementation of strict safety measures to ensure the prevention of cross-infection with new coronavirus. Also, the opening of the most dental offices and clinics, after the closing of the emergency state, was accompanied by rules and recommendations aiming to ensure both safety and effectiveness of the dental activity in the post Covid 19 era. The dental schools faced new challenges related to disruption of dental students from clinical learning experiences, cancellation of scientific conferences, changes of plans and activities, blocking of academic contests for promotion and hiring of new academics and scientists, social isolation and psychological impacts on staff and students. During pandemic period most of the dental schools shifted to online teaching sharing high quality courses, clinical cases and problem-based learning tutorials by technological platforms, and redesigned theoretical and practical examens to allow the end of academic year. In the new context, the dental schools face challenges related to the need for redesigning of the clinical space and mixing the clinical and online dental education, the insurance of the safety of the dental students, teaching staff, and patients, the adjusting of the academic calendars, the maintenance of the academic and research activities as well as the continuity of the oral health care activities.

Key words: dental health care, dental schools, infection, Covid 19, safety measures

The spread of coronavirus (Covid-19) in Europe represented a challenge both for dental health care providers and dental schools. Considering the role of these two domains in the prevention of the infection with the new coronavirus, the professionals in both areas faced unexpected and unforeseen challenges during pandemic outbreak period (1).

Covid 19 challenges in dental health care

The biggest change imposed in the pandemic lockdown period was related to the drastic limitation of the dental activity to only emergency care. This was due to the higher risk of Covid-19 infection of dental professionals due to face-to-face contact, the presence of Covid-19 in aerosols (liquid and solid particles suspended in air for protracted period) and splatter (mixture of air, water, solid substances) and splatter frequently formed during routine or surgical dental procedures when using high-speed instruments (2-5). Also, 91,7% of patients' with Covid 19 infections present the virus in saliva and saliva samples can cultivate the live virus. These data suggest that Covid-19

can be transmitted by asymptomatic infection that originate from infected saliva (6). The association of the dental procedures with large number of droplets and aerosols that could be generated make ineffective the standard protective measures in daily clinical work regarding the prevention of the spread of COVID-19, especially when patients are in the incubation period, are unaware they are infected, or choose to conceal their infection (7).

The recommendations for safety measures were provided by dental regulatory authorities in various countries (American Dental Association, L'Ordre National des Chirurgiens-Dentistes, FDI, Canadian Dental Association, Swiss Dental Association) (8-11). The instructions were classified in three categories: before dental care starts, during dental care, after dental care. The recommendations addressed to issues as follows: dentists and dental team preparation, screening for Covid-19 status and triaging for dental treatment, instructions for social distancing and waiting area, transmission precautions, personal protective equipment, technical approaches and equipment to reduce transmission, behavior and procedures following suspected, unintentional exposure, cleaning and sanitizing surfaces and equipment, post-operative instructions for patients, steps to prevent disease transmission between work and home. To ensure the safety of dental stuff and patients, the recommended measures were as follows: wearing of protective equipment including FFP3 protective mask or N-95 masks when aerosols procedures are performed (instead of regular surgical mask), wear eye protection with solid side shields or face shields during procedures likely to generate splashing of droplets, blood or saliva, wear of full-body surgical gowns, the use of rubber dams if performing aerosol-producing procedures, 4-handed technique for controlling infection, high-volume evacuators, and disinfection with hypochlorite or ethanol of handpiece and 3-in-1 syringe water supplies. Also, instructions for preoperative antimicrobial mouth rinses are given, as gargling has been reported to decrease the viral load and spread by removing oropharyngeal protease and associated viral replication; also, mouthwashes containing agents with anti-viral activity such as povidone-iodine are effective against various respiratory viruses (12, 13). The dental procedures that can induce coughing should be avoided every time when possible, and intraoral x-ray examination must be replaced with

panoramic radiography as it can stimulate saliva secretion and coughing.

According to the instructions from the dental associations, during the pandemic period, both in Romania and European countries, the public dental care and private dental providers provided only dental emergencies and dental care urgencies. The dental emergencies were classified as follows: uncontrolled bleeding; diffuse soft-tissue bacterial infections with intra-oral or extra-oral swelling or trauma involving facial bones that potentially compromises the patient's airway. The dental urgencies included: swelling of gum, cheek or face which; acute oral pain; mouth ulcers prolonged for more than two weeks; bleeding that lasts more than 20 minutes to a patient with recent tooth extraction; fractured tooth which is causing pain and damage to cheek or tongue; traumatized tooth; bleeding due to facial trauma. For the dental procedures considered non-urgent, the recommendations for dentists were to be connected to their patients by phone calls, e-mails and telemedicine. Despite the problems raised by the interruption of the usual management of patients' flow and the stopping of the dental procedures included in "non-urgent" category, both dentists and patients accepted and understood the risks and the reasons behind such measures. Excepting dentists involved in the treatment of dental urgencies, most dentists were limited to take care of patients' requests by phone and issuing prescriptions for medication when needed. For dental staff providing dental urgencies, an additional challenge was the lack of personal protective equipment especially in the first weeks of the pandemic period.

New guides were released by dental regulatory authorities after the end of the emergency state. The restrictions regarding the non-emergency dental procedures were removed and new guidelines were provided for the organization of the activity in dental offices in post-Covid 19 period. Romanian College of Dental Practitioners also synthesized the instructions and recommendations of the most relevant international dental associations in a guide that was provided to help dental stuff to return to their activity safely and effectively (14).

Nowadays, the dental practitioners worldwide are concerned about the implications of the "new normal" in dentistry (15). The survey performed by Ahmed et al (2020) on dental practitioners from 30 countries, found that dentists are aware of being with high risk of getting

infected from patients and potentially spreading it to their peers, families, and other patients. Positive data reported by this survey are as follows: 90% of dentists are updated with current CDC or WHO guidelines for cross-infection controls regarding transmission of Covid-19, 89% routinely follow universal precautions of infection control for every patient, 76% use high-volume suction in practice for every patient. However, only 14% of dentists use of rubber dam isolation for every patient while only 24% ask every patient to rinse mouth with antibacterial mouthwash before treatment (15).

In the post Covid-19 era the dental practitioners must consider the following challenges:

-the growth of the patients' needs of routine dental care;

-the increase of the rate of the new dental pathologies;

-complications related to the delay of the dental procedures;

-the change of patients' behavior related to the psychology and financial possibilities;

-new measures required in dental practices to prevent the infection with Covid 19;

-the reorganization of the dental office circuits and administration;

-the management of patients' flow and schedules.

These changes will reflect in the increase of the price of the dental consumables, the increase of the preparation time, the decrease of the number of patients treated daily, the reduction of the patients' demands for complex oral rehabilitation treatments, as well as the diminishing of the patients' real working time. The interviews with renowned dental specialists worldwide highlight the fact that the dentists are aware about the impact of these changes in the post Covid 19 era. They talk about complete change of habits and routine activities with great impact on timing of the procedures, the ergonomics of work and financially. The dentists are aware about the new reality where "nothing will be as it was before, at least for a long time", as well as the need to reorganize their clinics and the challenges posed by economic crisis that is arising from this situation (16). Also, the dentists exposed more straightforward opinions: "many dentists with small offices, those maybe not highly ethical or up to date professionally, or not giving the best level of care, will not be able to survive and will just have to close for good"; "the patients will think twice and be particularly careful to make sure that the

clinic that they choose will offer proper safety measures as well."(17, 18).

Covid 19 challenges in dental medicine schools

The status of the dental teaching in post-Covid 19 is an issue of interest as dental schools are, at the same time, educational and research institutions, small dental clinics, operational businesses with high infrastructural and operational costs, that contribute to the health status of the population (including disadvantaged categories that benefit from low costs or free dental therapy) and to the economy by creating jobs, presenting new dental technologies, and sustaining of the manufacturers of dental devices and materials (19).

During the pandemic period most of the dental schools shifted to online teaching by technological platforms. The leaders of universities and medicine and dental faculties took quick actions to readjust the strategy and methods of the educational activities, the national and international collaborations among universities as well as to motivate the staff to be resilient and committed to new circumstances and working conditions (1, 7). The established teaching curricula and teaching procedures were adapted to high quality online courses and practical demonstrations by sharing videos and Powerpoint presentations with clinical cases and problem-based learning tutorials to provide learning materials and support for dental students (20, 21). Also, the theoretical and practical examinations were redesigned to allow the end of academic year. Despite the reorganization and resilience of the academic staff, this pandemic period was associated to many problems for teachers, students and patients of dental schools related to lockdowns of clinics: the disruption of dental students from clinical learning experiences; the stopping of patients' access to dental care in faculty clinics; financial losses; breakdown of research activities and grants; cancellation of scientific conferences (some of them held in virtual space); changes of plans and activities; the blocking of academic contests for promotion and hiring of new academics and scientists; social isolation and psychological impacts on staff and students (22).

Concerns about the future of dental education are raised by Advancing Education and Oral health Association (ADEE) that sent a survey to their collaborators from European dental schools

with questions regarding the future reconfiguration of the clinical environment (patient treatment areas) to ensure compliance with the new safety protocols. This survey raised issues such as the degree of the required structural changes (from no changes needed or minimal changes required to complete redesign of the clinics), the changes within institutional policy/protocols, treatment times, or institutional education/curriculum approaches (23). Regarding the future of the dental schools, a few questions arise (24):

- How it will be further provided the theoretical and practical education for dental students? What changes will need the dental schools regarding the working spaces and teaching procedures?
- How it will change the opportunities of graduate students to find a job? How it will reflect these changes in the addressability of high school graduates to dental schools?
- Who will address the patients from disadvantaged groups that benefits from low-cost or free dental care during the period of closed dental schools?
- What will be the evolution of the research in the dental field?

In the new context, the dental schools face challenges related to the need for redesigning of the clinical space and mixing the clinical and online dental education, the insurance of the safety of the dental students, teaching staff, and patients, the adjusting of the academic calendars, the maintenance of the academic and research activities as well as the continuity of the oral health care activities (24).

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